

REMARKS

The Office Action of July 3, 2002 has been received and its contents carefully noted.

The present Amendment corrects inadvertent informalities that were discovered in two paragraphs of the specification. It also revises the Abstract to adapt it to US practice and to improve its general readability.

The present Amendment also replaces the original claims with new claims 5-12. Of these new claims, claims 5 and 9 are independent. Since support for new dependent claim 8 may not be immediately apparent, it is noted that this claim is supported by the sentence at page 7 of the application, lines 8-12. The present application discloses a hybrid drive device that includes two converters, 15 and 23. The converter 15 is disposed outside a storage device 12, while the converter 23 (see Figure 2 of the application's drawings) is disposed inside the storage device 12. The first converter, 15, converts AC produced by a generator 14 to DC for charging the storage device 12. The second converter, 23, is a bi-directional switching converter which controls DC for charging a condenser bank 20 ("condenser" is a somewhat-dated term for "capacitor") to a fixed current value. Using a fixed current value to charge the condenser bank 20 leads to high charging efficiency, without a large energy loss, as is explained in the present application (see, in particular, the passage from the middle of page 6 to the top of page 7).

The Office Action rejects claims 1 and 2 (now cancelled) for anticipation by Koike et al (hereafter simply "Koike"), and it also rejects claims 3 and 4 (now cancelled) for obviousness on the basis of Koike in view of Araki et al (hereafter simply "Araki"). For the reasons discussed below, though, it is respectfully submitted that new independent claims 5 and 9 are patentable over these references.

Claim 5 recites a storage device that includes "a condenser bank having a plurality of condenser cells connected in series." The Office Action draws attention to elements 17 in Koike's Figure 2, but Koike's elements 17 are cells of a **storage battery**, and not capacitors. Claim 5 also recites "a plurality of parallel monitors, each parallel monitor...conducting a direct current so as to bypass the corresponding condenser cell if the terminal voltage of the corresponding condenser cell exceeds a fixed voltage." The

Office Action draws attention to reference number 20 in the Koike reference, but (according to the GB version of the reference) this reference number merely identifies connectors. One might also consider Koike's detection units 19. These are mentioned in the next-to-last paragraph on page 14 of the GB publication in the top paragraph on page 15. From these paragraphs, it seems likely that an ordinarily skilled person would conclude that Koike's detection units 19 are present merely to permit visual detection of the state of Koike's storage batteries. There is no hint that current flows through them so as to bypass the corresponding cells if the terminal voltage exceeds a fixed voltage.

Independent claim 5 also recites that "a first converter" for converting AC generated by a generator to DC for charging a storage device, along with "a second converter" that is included in the storage device. This "second converter" is "a bi-directional switching converter which is connected in series with the condenser bank and which controls the direct current for charging the condenser bank to a fixed current." However, the Koike reference only provides one converter, a DC-DC converter 16. Moreover, Koike's DC-DC converter 16 does not have fixed current output characteristics; instead, it produces a **fixed output voltage** of 24V.

The Araki reference is directed to an arrangement for avoiding damage to a starter unit even if the starter switch malfunctions. This is accomplished by using a charge stored by a subsidiary storage device 2 (which can be a condenser--see the last sentence of Araki's column 4) to actuate a magnetic switch 40 so as to connect a battery 1 to a starter motor 41 for no longer a period of time than it takes the subsidiary storage device to become discharged.

First, it is respectfully submitted that the Araki reference should not be combined with Koike. The reason is that an ordinarily skilled person who wanted to improve some aspect of Koike's controller for a battery in a hybrid vehicle would have no reason to think that Araki's arrangement for preventing damage to a starter unit would provide assistance in that endeavor.

Secondly, the Araki reference does not supply what is missing from Koike. Nothing in Araki would lead an ordinarily skilled person to modify Koike by including the "second converter" of claim 1 or the "plurality of parallel monitors."

Turning now to independent claim 9, this claim recites "a condenser bank," "a plurality of parallel monitors," and "a second converter." For reasons along the lines discussed above with respect to claim 5, it is respectfully submitted that these features are neither disclosed nor suggested by the references.

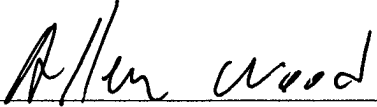
Since the remaining claims depend from the independent claims discussed above and recite additional limitations to further define the invention, they are patentable along with their independent claims and need not be further discussed.

For the foregoing reasons, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the application is therefore respectfully requested.

Respectfully submitted,

September 30, 2002
Date

AW:tlc
Attachment


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